

SYSTEM AND METHOD FOR PREFERENTIALLY CONTROLLING GRATING  
LOBES OF DIRECT RADIATING ARRAYS

ABSTRACT OF THE DISCLOSURE

5           A DRA with preferentially controlled grating lobes is described. The DRA  
comprises a plurality of elements, collectively defining a main lobe nearest the DRA  
boresight and a set of grating lobes near the main lobe, wherein each of the grating lobes in  
the set of grating lobes is angularly displaced from the main lobe by a grating lobe angle that  
varies asymmetrically about that main lobe. In one embodiment, the plurality of elements  
10       comprises a first row of elements extending in a first direction that is tilted relative to the  
Northerly direction by an angle  $\psi$ , and a second row of elements, parallel to the first row of  
elements, the second row of elements offset from the first row of elements in the first  
direction by a stagger distance S.